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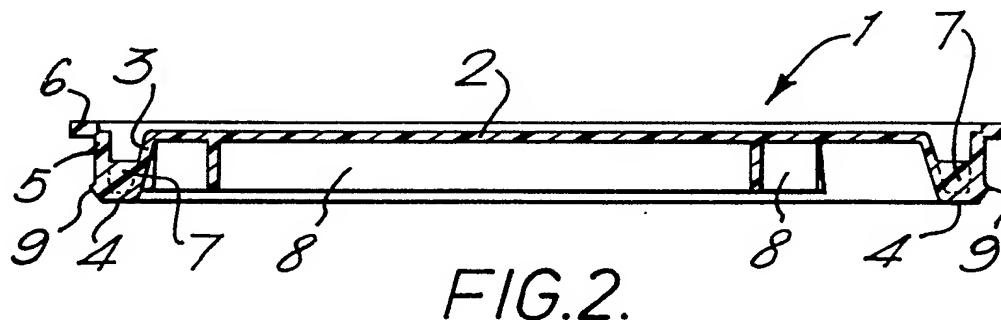
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(54) **Container lid**

(57) A container lid (1) of the lever  
type, comprises biasing means (7),  
which are circumferentially spaced  
around the lid (1) and which extend  
radially thereof between the first and  
second annular walls (3, 5) of the lid  
(1). Strengthening means (8) are  
associated with the planar, circular

centre portion (2) of the lid (1).

The biasing means comprise a  
plurality of webs (7) which are  
connected to and upstand from the  
annular portion (4) between the  
respective lower edge regions of the  
first and second annular walls (3, 5).  
The strengthening means (8) comprise  
at least three elongate depending  
flanges (8), with the adjacent ends of  
each pair of adjacent flanges being  
connected together at the radially  
inner surface of the first annular wall  
(3) of the lid (1). The lid may be  
provided with an outwardly projecting  
bead (9) extending around the lower  
edge of the radially outer surface of  
the second annular wall (5). The bead  
may be provided with  
circumferentially-spaced gaps therein.



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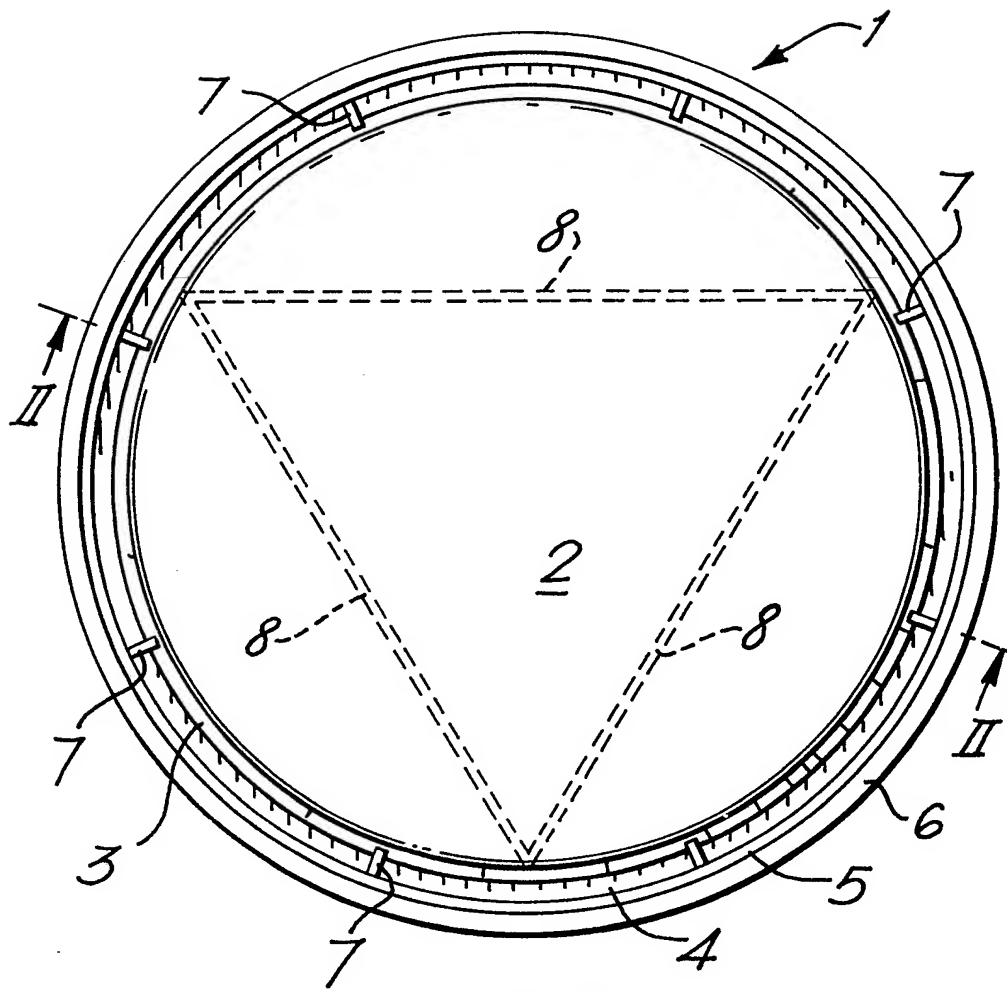


FIG. 1.

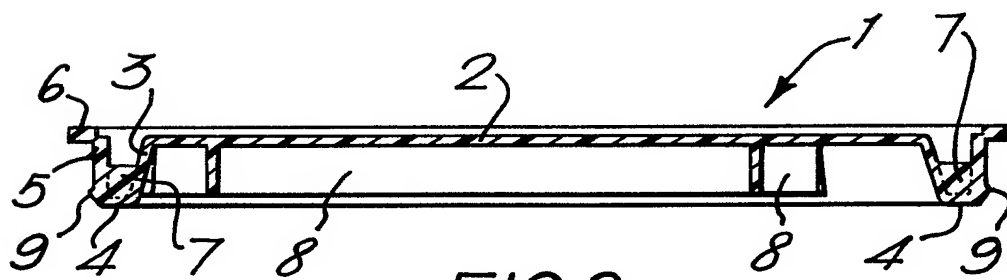


FIG. 2.

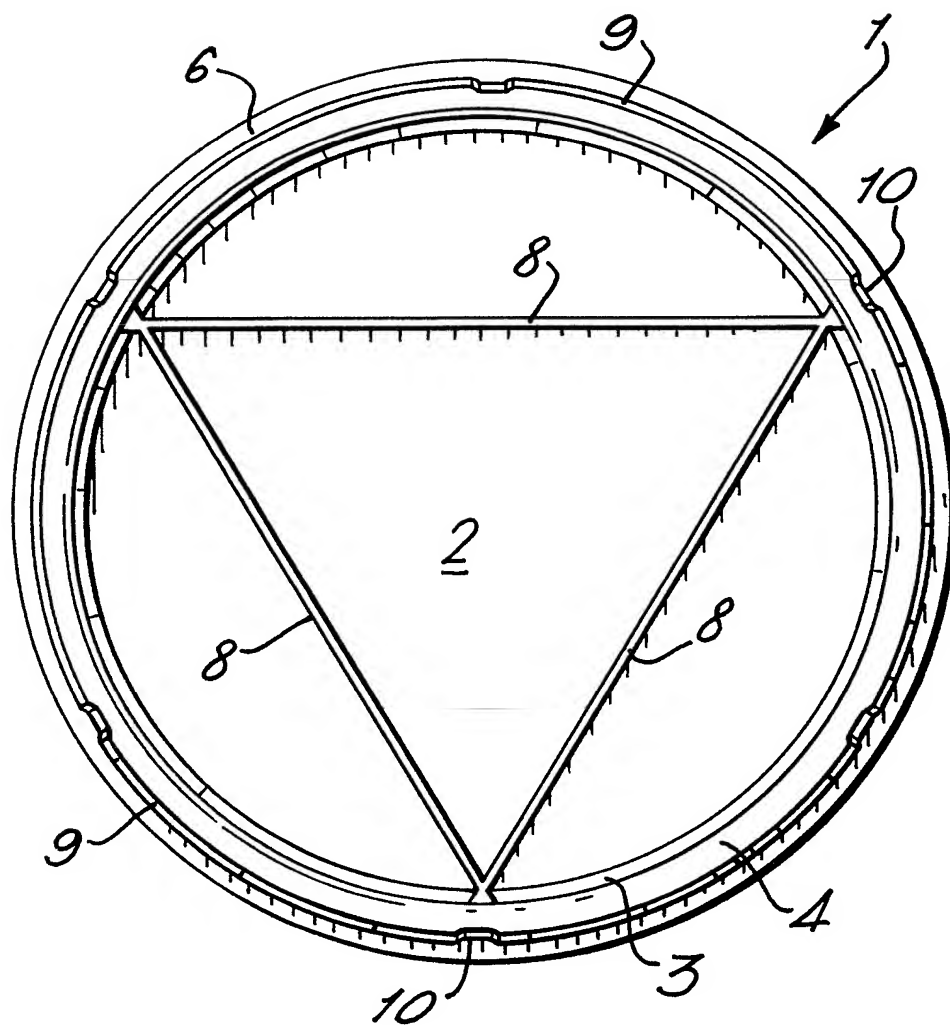


FIG. 3.



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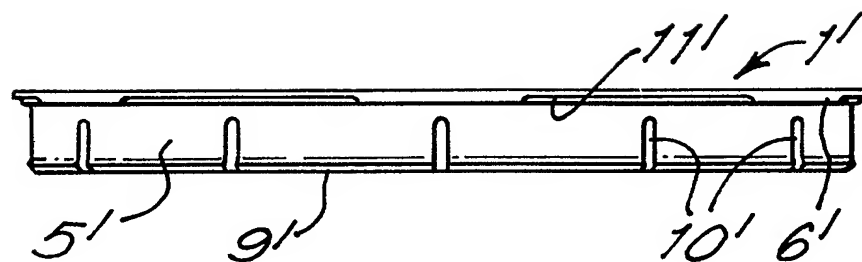


FIG. 6.

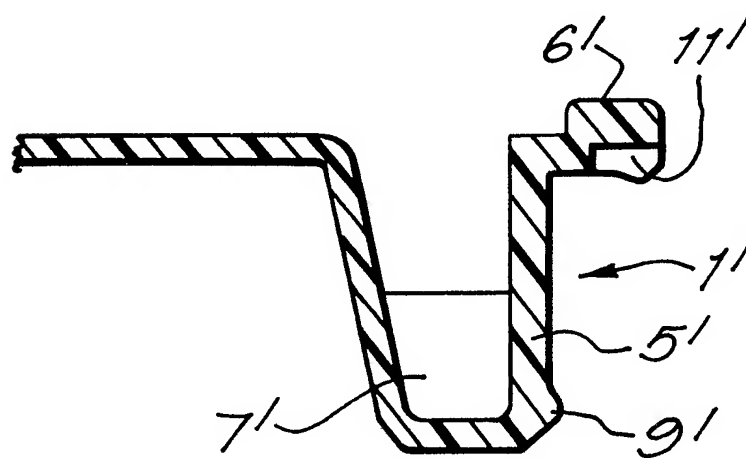


FIG. 7.

## SPECIFICATION

### Container lids

This invention relates to lids for containers and, in particular, to lever lids for cans having lever rings.

Known lever lids for lever ring cans of cylindrical shape have a planar circular centre portion from whose peripheral edge depends a first wall which is connected to an annular portion lying in a plane generally parallel to that of the centre portion. From this annular portion upstands a second wall which is concentric with, and generally parallel to, the first wall and which has a radially outwardly extending flange at its upper edge. The inner and outer surfaces of the respective lower regions of the first and second annular walls and the annular portion form what is known as the "nose" of the lid, whilst the outwardly extending flange, which also lies in a plane generally parallel to that of the circular centre portion, constitutes "the rim" of the lid.

A disadvantage associated with this known type of lever lid, and particularly those made of plastics material, is that the outer surface of the second annular wall sometimes does not form a permanent air and liquid-tight seal with the corresponding surface of the lever ring of a filled can to which the lid is applied, due to the somewhat flexible and resilient nature of the material from which the latter is made.

Thus, one object of the invention is to provide a lever lid, preferably made of a plastics material, whose outer surface of the second, outer annular wall is maintained in air and liquid-tight sealing contact with the corresponding surface of the lever ring of a filled can to which the lid is applied.

Another disadvantage associated with the known type of lever ring described above is that, because the lid is generally made of a flexible and/or deformable material, the circular central portion tends to bow outwardly either when the lid is being applied to a filled can or when the contents of the can expand under, say, comparatively high temperature conditions. This outward bowing of the central portion of the lid is highly undesirable.

Accordingly, a second object of the invention is to provide a lever lid whose circular, planar central portion does not bow outwardly when the lid is being applied to a filled can or under subsequent storage conditions.

In accordance with one aspect of the invention, therefore, there is provided a lid for a container of the type described above, with biasing means which are circumferentially spaced around the lid and which extend radially outwardly thereof between the first and second, concentric walls. Preferably, said biasing means comprises a plurality of webs which are connected to and upstand from the annular portion which extends between the lower edge regions of the first and second walls.

Said biasing means is arranged to maintain the outer surface of the second wall in air and

liquid-tight sealing contact with the corresponding surface of the lever ring of a filled can to which the lid is applied.

In accordance with a second aspect of the invention, there is provided strengthening or reinforcing means associated with the planar, circular centre portion of the lid, whereby any tendency of this portion to bow during application of the lid to a filled can or during subsequent storage thereof is prevented or at least substantially reduced. Preferably, said strengthening or reinforcing means is located on the underside of this centre portion and may also be connected to the radially inner surface of the first annular wall.

In a preferred embodiment of this particular aspect of the invention, said strengthening or reinforcing means comprises three elongate depending flanges which form a triangle on the underside of the circular centre portion, the apices of the triangle being connected to the radially inner surface of the first wall. However, any number of such flanges can be used.

In a lid in accordance with either aspect or both aspects of the invention, the lower edge of the radially outer surface of the second wall may be provided with an outwardly projecting head bead which, preferably, is provided with circumferentially-spaced gaps constituting vents for allowing air to exit from a can past the bead, on application of the lid to a can, whereby no excess pressure is maintained within the filled and sealed can.

In a particularly advantageous embodiment of the lid, these circumferentially-spaced gaps in this bead are located in register with corresponding ones of the biasing webs extending between the first and second walls of the lid. Also, at least some of the ends of the elongate flanges on the underside of the circular centre portion of the lid can also coincide with these circumferential gaps in the sealing bead.

Furthermore, the lid may be provided with at least one peripheral recess in the underside of its rim to facilitate the lever action which is used to remove the lid from a container to which it has been applied.

Lids in accordance with both aspects of the invention are preferably moulded as unitary structures from a plastics material.

In order that both aspects of the invention may be more fully understood, lids incorporating both inventive arrangements will now be described by way of example and with reference to the accompanying drawings in which:

Fig 1 is a plan view of a first form of lid incorporating both aspects of the invention;

Fig 2 is a section of the lid shown in Fig 1 along the line II—II;

Fig. 3 is a bottom plan view of the lid shown in Figs 1 and 2;

Fig 4 is a plan view of a second form of lid incorporating both aspects of the invention;

Fig 5 is an underside plan view of the lid shown in Fig 4;

Fig 6 is a side view of the lid shown in Figs 4 and 5; and

Fig 7 is an enlarged partial section of the lid shown in Figs 4 to 6, along the line VII—VII in Fig 4.

Referring now to Figs 1 to 3 of the drawings, a moulded plastics lid 1 for a 2½ litre paint can comprises a planar, circular centre portion 2 from whose periphery depends a first wall 3 which is connected to an annular portion 4 lying in a plane generally parallel to that of the centre portion 2. From this annular portion 4 upstands a second wall 5 which is concentric with the first wall 3 and has a radially outwardly extending flange 6 at its upper edge. This flange 6 provides the rim of the lid 1.

In accordance with the first aspect of the invention, eight circumferentially-spaced webs 7 extend between the two walls 3, 5 and are also connected to the upper surface of the annular portion 4. These radially extending webs 7 maintain the desired spacing between the two walls 3, 5 whilst also biasing the wall 5 radially outwardly to maintain the outer surface of this outer wall 5 in fluid-tight contact with a corresponding surface of the lever ring of a can to which the lid is applied.

In accordance with the second aspect of the invention, the underside of the circular centre portion 2 of the lid has three elongate flanges 8 associated therewith. These three flanges 8 depend from the centre portion underside and form a triangle whose apices are connected to the radially inner surface of the first wall 3. Of course it will be appreciated that more or less flanges 8 can be provided.

The flanges 8 constitute strengthening or reinforcing means for the planar, circular centre portion 2 of the lid, whereby this portion is prevented from bowing outwardly when the lid is applied to a can or during subsequent storage of the closed can under adverse temperature conditions.

The lower, outer edge region of the outer, second wall 5 has a radially outwardly projecting bead 9 provided with six circumferentially-spaced gaps 10 therein. These gaps 10 permit air to vent from a filled can to which the lid 1 is being applied, whereby no excess pressure is built-up within the can, when the radially outer surface of the second wall 5 engages in a fluid-type manner with the corresponding inner surface of the lever ring of the can.

In an alternative arrangement of lid shown in Figs 4 to 7, a peripheral bead 9' has twelve such gaps 10 which lie in register with respective webs 7' of which there are also twelve. The ends of three flanges 8' also coincide with three of the twelve webs 7' and associated gaps 10' in the bead 9'.

It will be appreciated that this bead 9', as well as the bead 9, provides a snap-fit for the respective lids as each is applied to a filled can, after which the webs 7' maintain the radially outer surface of the second 5, 5' in fluid-type

contact with the corresponding surface of the can lever ring.

Also, the rim 6' of the lid 1' has six recesses 11' which are spaced around the peripheral underside of the rim to facilitate insertion of the end of a lever, such as a screwdriver, for levering the lid from a can to which the lid has been applied.

The taps 10' in the bead 8' extend, upwardly as elongate recesses in the outer surface of the second wall 5' but do not reach the juncture between this wall and the rim flange 6', because otherwise there would be no seal between this outer surface and the corresponding inner surface of the lever ring of a can to which the lid is applied. Preferably the height of these recesses 10' is equal to that of the webs 7'.

The lids are preferably moulded as unitary structures on a plastics material, although any other suitable form of material may be used.

#### Claims (Filed on 30.11.82.)

1. A container lid of the type defined above, comprising biasing means which are circumferentially spaced around the lid and which extend radially thereof between the first and second annular walls of the lid.

2. A container lid as claimed in claim 1, wherein said biasing means comprises a plurality of webs which are connected to and upstand from the annular portion between the respective lower edge regions of the first and second annular walls.

3. A container lid as claimed in claim 1 or 2 including an outwardly projecting bead extending around the lower edge of the radially outer surface of the second annular wall.

4. A container lid as claimed in claim 3, wherein the bead has spaced gaps therein.

5. A container lid as claimed in claim 4, when dependent upon claim 2 or 3, wherein the gaps in the bead are in register with at least some of the webs.

6. A container lid as claimed in any preceding claim which is made of a plastics material.

7. A container lid as claimed in claim 6, which is moulded as a unitary plastics structure.

8. A container lid of the type defined above, comprising strengthening or reinforcing means associated with the planar, circular centre portion of the lid.

9. A container lid according to claim 8, wherein said strengthening or reinforcing means is located on the underside of the centre portion of the lid.

10. A container lid according to claim 9, wherein said strengthening or reinforcing means comprises at least three elongate depending flanges, the adjacent ends of each pair of adjacent flanges being connected together.

11. A container lid according to claim 10, wherein the adjacent ends of each pair of adjacent flanges, which ends are connected together, are also connected to the radially inner surface of the first annular wall of the lid.

12. A container lid according to claim 11, wherein there are three elongate depending

flanges which form a triangle on the underside of the circular centre portion of the lid, with the apices of the triangle being connected to the radially inner surface of the first annular wall.

5 13. A container lid according to any of claims 8 to 12 including an outwardly projecting bead extending around the lower edge of the radially outer surface of the second annular wall.

10 14. A container lid according to claim 13, wherein the bead has spaced gaps therein.

15 15. A container lid according to claim 14, when dependent upon any of claims 10 to 13, wherein the gaps in the bead are in register with at least some of the connections between adjacent ends of respective pairs of adjacent depending flanges.

16. A container lid as claimed in any of claims 8 to 15 which is made of a plastics material.

17. A container lid as claimed in claim 16 which is moulded as a unitary plastics structure.

20 18. A container lid of the type defined above, comprising:

(a) biasing means which are circumferentially spaced around the lid and which extend radially thereof between the first and second annular walls of the lid; and

25 (b) strengthening or reinforcing means associated with the planar, circular centre portion of the lid.

30 19. A container lid according to claim 18, wherein said biasing means comprises a plurality of webs which are connected to and upstand from the annular portion between the respective lower edge regions of the first and second annular walls.

35 20. A container lid according to claim 18 or 19, wherein said strengthening or reinforcing means is located on the underside of the centre portion of the lid.

40 21. A container lid according to claim 20, wherein said strengthening or reinforcing means comprises at least three elongate depending flanges, the adjacent ends of each pair of adjacent

flanges being connected together.

45 22. A container lid according to claim 21, wherein the adjacent ends of each pair of adjacent flanges, which ends are connected together, are also connected to the radially inner surface of the first annular wall of the lid.

50 23. A container lid according to claim 22, wherein these are three elongate depending flanges which form a triangle on the underside of the circular centre portion of the lid, with the apices of the triangle being connected to the radially inner surface of the first annular wall.

55 24. A container lid according to any of claims 18 to 22 including an outwardly projecting bead extending around the lower edge of the radially outer surface of the second annular wall.

25. A container lid according to claim 24, wherein the bead has spaced gaps therein.

60 26. A container lid according to claim 25, when dependent upon any of claims 19 to 24, wherein the gaps in the bead are in register with at least some of the webs and/or at least some of the connections between adjacent ends of respective pairs of adjacent depending flanges.

65 27. A container lid according to claim 23, when dependent upon any of claims 19 to 22, wherein the connections between adjacent ends of respective pairs of adjacent depending flanges are in register with at least some of the webs.

70 28. A container lid according to any of claims 18 to 27 which is made of a plastics material.

29. A container lid according to claim 28 which is moulded as a unitary plastics structure.

75 30. A container lid according to any preceding claim including at least one peripheral recess in the underside of the rim of the lid.

31. A container lid substantially as hereinbefore described with reference to the accompanying drawings.

80 32. A container when fitted with a lid according to any preceding claim.